

REMARKS

In the Office Action, the Examiner rejected claims 1, 2, 5-7, 21 and 22 under 35 U.S.C. 103(a) as being unpatentable over Frankeny et al. (US Pat. 5691041) in view of Akagawa et al. (US Pat. 5834844); rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Frankeny et al. and Akagawa et al. and further in view of Wang et al. (US Pat. 6081026); and rejected claims 15-17, 19, 20, 25, 26 under 35 U.S.C. 103(a) as being unpatentable over Frankeny et al. in view of Mizuno et al. (US Pat. 6077757) and Akagawa et al. The rejections are fully traversed below. Reconsideration of the application is respectfully requested based on the following remarks.

New claims 29-34 have been added. Accordingly, claims 1-3, 5-7, 15-17, 19-22, 25-26, and 29-34 are now pending in this application.

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REJECTION OF CLAIMS UNDER 35 U.S.C. §103(a)

The invention as set forth in independent claim 1 generally relates to a solid flexible circuit film conductively attached to an integrated circuit die. Specifically, independent claim 1 requires among other things “a solid flexible dielectric circuit film having a top surface, a bottom surface”, and “at least one outer landing formed on the top surface and at least one inner landing formed on the bottom surface” where the “two landings are connected via the routing conductor, which extends laterally within the solid flexible dielectric circuit film”. One of the many advantages of having this solid flexible circuit film in the manner claimed is that the routing conductor is protected from exposure to the elements as well as to other surfaces since it extends laterally within the solid flexible dielectric circuit film (FDCF). Consequently, the amount of exposed conductive areas on the solid FDCF is minimized (e.g., limited to the two landings). Likewise, independent claim 15 requires a similar limitation as noted for claim 1 above.

In contrast, primary reference Frankeny et al. merely discloses plated or filled vias extending vertically (not laterally) through the body 4 of interposer 3. (See Fig. 6 at positions 11, 14, 18, and 20) In fact, Frankeny et al. explicitly states that “FIGS. 3 and 4 show that the plated through holes 6 pass straight through dielectric body 4 of interposer 3.” (See column 4, lines 12-14) It is true that Frankeny et al. discloses a conductor 16 that runs laterally within body 4 of interposer 3, however Frankeny discloses that it is only “common to” the electrical connections created at locations 13 and 14. (See column 4, lines 56-63) That is, conductor 16 is merely common with the electrical connections, possibly to provide either ground, power, or

signal feeds into the electrical connections. Frankeny et al. does not teach or suggest that conductor 16 structurally connects the electrical connection (e.g., the not numerically referenced pads) created at location 13 with that created at location 14. Rather, it is the vertical straight through plated via at location 14 that structurally connects them. Similarly, secondary references Akagawa et al., Mizuno et al., and Wang et al. also fail to disclose a solid FDCF, much less two landings that are connected via a routing conductor, which extends laterally within the solid FDCF. In addition, the interposers described in Wang et al. as a whole are far more complex than the solid FDCF's required by independent claims 1 and 15, making them more expensive to manufacture and more susceptible to failure. In light of these differences, it is respectfully submitted that Frankeny et al., Akagawa et al., Mizuno et al. or Wang et al., alone or in combination, do not teach or suggest independent claims 1 and 15. Therefore, it is submitted that claims 1 and 15 are patentably distinct from the cited references.

Claims 2-3, 5-7, 16-17, 19-22, and 25-26 each depend either directly or indirectly from independent claims 1 and 15 and are therefore respectfully submitted to be patentable over the art of record for at least the reasons set forth above with respect to the independent claims 1 and 15. Additionally, these dependent claims require additional elements that when taken in the context of the claimed invention as a whole, further patentably distinguishes the art of record.

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NEW CLAIMS

New Claims 29-34 are believed to be patentable over the art of record for much the same reasons as claim 1 or claim 15. Support for the new claims may be found in Figures 4 and 5.

Claims 29 and 32 have been added to explicitly cover embodiments wherein the laterally extended segment(s) of the routing conductor(s) is necessarily required to connect the landings together. New claims 30 and 33 are intended to recite the arrangement of the routing conductor(s) to be that of a step-like shape. Additionally, new claims 31 and 34 are intended to further recite the arrangement of the routing conductor(s). Specifically, each routing conductor(s) connects to the outer landing with a first vertical segment and connects to the inner landing with a second vertical segment, wherein the first and second vertical segments are laterally offset from each other, the first and second vertical segments being necessarily connected together with the laterally extended segment of the routing conductor.

SUMMARY

It is respectfully submitted that all pending claims are allowable and that this case is now in condition for allowance. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

If any additional fees are due in connection with the filing of this Amendment, the Commissioner is authorized to deduct such fees from the undersigned's Deposit Account No. 500388 (Order No. NSC1P181).

Respectfully submitted,
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